

## A New Genus and Species of the Subfamily Amphilochinae (Amphipoda, Gammaridea, Amphilochidae) Found in the Japan Sea

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**ABSTRACT**—*Paramphilochus parachelatus* n. gen. et n. sp. (Amphipoda, Gammaridea, Amphilochidae, Amphilochinae) was found in the Japan Sea. This new genus was considered closely related to the genus *Amphilochus*, but unique for its parachelate gnathopod 2.

### INTRODUCTION

A remarkable gammaridean amphipod clearly assignable to the subfamily Amphilochinae was collected in the middle coastal area of the Japan Sea. This species quite differs from all of the previously known genera of the subfamily. A new genus is established for this new species in the present paper. In Japan, Amphilochinae has been represented by only one genus, *Gitanopsis*. The present new genus is the second genus known from Japan.

*Abbreviations of legends* so, setae (or spines) omitted; ds, dorsal view; vt, ventral view; ant, anterior view; post, posterior view; inn, inner view; out, outer view; R, right part; L, left part.

### DESCRIPTION

Family Amphilochidae

(Japanese name: Chibiyokoebi-ka, new)

Subfamily Amphilochinae

(Japanese name: Chibiyokoebi-aka, new)

*Paramphilochus* n. gen.

(Japanese name: Hasami-chibiyokoebi-zoku, new)

*Diagnosis* Labrum incised. Mandibular mo-

lar narrow, conical, and not sclerotized. Maxilla 1, palp normal, biarticulate, outer plate with single tooth on inner margin. Maxilla 2 not reduced, inner plate slightly broader than outer, both plates sparsely setose apically. Maxilliped normal. Gnathopod 1, article 5 with a long and broad posterior lobe, article 6 expanded, triangular, palm transverse. Gnathopod 2 parachelate, larger than 1, posterior lobe of article 5 very short. Telson entire, coniform, about as long as urosomite 3.

*Type-species* *Paramphilochus parachelatus* n. sp.

*Paramphilochus parachelatus* n. sp.

(Japanese name: Hasami-chibiyokoebi, new)

(Figs. 1-3)

*Type-series* Holotype: ov♀, 3.7 mm, among drifting seaweeds *Sargassum horneri* (Turner) C. Agardh, The Japan Sea (35°25.8'N, 132°19.7'E), 21-IV-1983, Ikehara coll. . . . . Allotype and paratypes: ♂, 2.5 mm; 3 ov♀, 3.7, 3.5, 3.4 mm, data same as holotype. Type-series are deposited in the Zoological Institute, Faculty of Science, Hokkaido University.

*Female* (holotype) Body 3.7 mm long. Head (excl. rostrum) as long as pereonite 1. Rostrum (Fig. 1-B) long, reaching distal margin of peduncular article 1 of antenna 1, with blunt apex. Lateral cephalic lobe truncate. Superior antennal

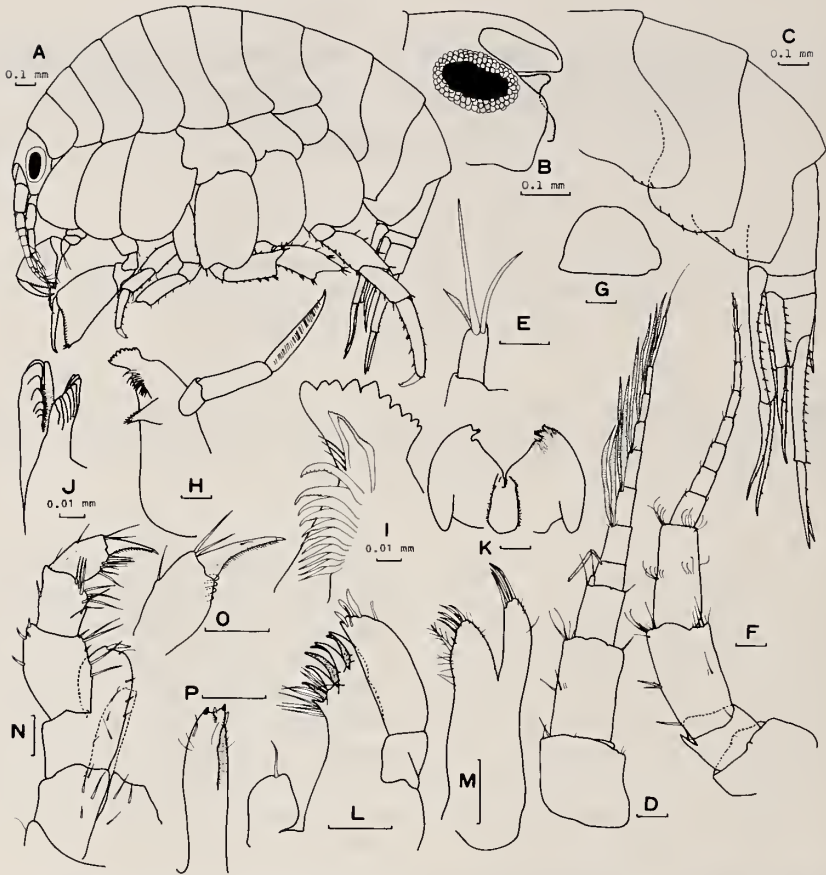


FIG. 1. *Paramphilochus parachelatus* n. gen. et n. sp. Female (holotype): A, habitus; B, head; C, pleon; D, antenna 1 (R, inn); E, accessory flagellum; F, antenna 2 (R, out); G, epistome; H, mandible (R, inn); I, incisor (R, inn); J, incisor and lacinia mobilis (L, inn); K, labium (vt); L-M, maxillae 1-2 (L, vt); N, maxilliped (R, vt); O, palp articles 3-4 of maxilliped (R, vt; so); P, inner plate of maxilliped (R, vt). Bar scales 0.05 mm if not mentioned.

sinus deep. Inferior antennal sinus absent. Eye large, oblong, consisting of black-pigmented core and thick and clear circumference. Body (Fig. 1-A) without dorsal cusps. Epimeron 1 (Fig. 1-C) spatulate; epimera 2-3 subquadrate, with slightly convex posterior margin, without tooth at posteroventral corner, provided with some marginal spines along ventral margin. Urosomite 1 as long as urosomites 2-3 (incl. posterior tooth of urosomite 3) combined; urosomite 3 with a pair of posterior teeth beneath telson.

*Antenna 1* (Fig. 1-D): Peduncular article 1 a little shorter than article 2. Primary flagellum 1.2 times as long as peduncle, 8-articulate, provided

with 1 or 2 long aesthetascs at posterodistal edge of each article (except terminal article); articles (except terminal article) longer than its width, whose length is almost consistent though width is gradually lessened; terminal article very long, 1.8 times as long as penultimate one. Accessory flagellum (Fig. 1-E) uniarticulate, conical, about half as long as first flagellar article. *Antenna 2* (Fig. 1-F) extended to reach apex of antenna 1. Gland cone weak, represented by low expansion scarcely reaching half length of peduncular article 3. Peduncular article 3 armed with a hood-like tooth at anterodistal edge, and with a long spine near the tooth. Peduncular articles 4-5 of about

the same length, laterally flattened, furnished with several setae. Flagellum as long as peduncle, 9-articulate, bearing fine setules on each article.

Midanterior keel of head (Fig. 1-B) strongly produced forward. *Epistome* (Fig. 1-G) short, rounded apically. *Labrum* lost through manipulation. *Mandible* (Fig. 1-H, I, J): Incisor 10-dentate (right) and 9-dentate (left). Lacinia mobilis on left mandible, 10-dentate. Spine row consisting of 13 serrulate spines. Molar not sclerotized at all, represented by narrow conical process. Palp as long as body of mandible; article 2 twice as long as article 1; article 3 lanceolate, 1.3 times as long as article 2, lined with a row of bristles, without any seta. *Labium* (Fig. 1-K): Both inner lobes indistinct, fused with each other. Outer lobe with a small conical process and a notch on shoulder. *Maxilla 1* (Fig. 1-L): Inner plate small, oval, with a minute apical setule. Outer plate armed with a ventral and a dorsal row, each consisting of 3 and 4 simple spines; single tooth located at lower angle, around which long bristles are arising from inner face. Palp biarticulate; article 2 narrowing distally, provided with 3 spatulate apical teeth. *Maxilla 2* (Fig. 1-M): Both plates fused with each other at base, suture invisible. Inner plate with a relatively thick plumose seta and 2 sparsely setal rows. Outer plate extended beyond inner plate, 60% as thick as inner, with a few apical setae. *Maxilliped* (Fig. 1-N): Both bases separate from each other, distal margin angular, with a few facial setae. Inner plate (Fig. 1-P) narrow, half as broad as outer plate, extended beyond base of palp, armed with 2 stumpy apical teeth, and with 2 thick spines on inner face. Outer plate oval, not excavate, not reaching distal margin of palp article 1, armed with a strong apical spine and a few marginal setules. Palp article 1 slightly expanded outward, with small extension at distal edge of outer margin, provided with 3 to 4 marginal spines along distal half of outer margin. Palp article 3 (Fig. 1-O) with 4 finger-like processes on dorsal face near inner distal margin. Palp article 4 bearing a nail.

*Coxae* with smooth ventral margins. Coxa 1 half as long as coxa 2, softly tapering. Coxa 4 narrowing distally.

*Gnathopod 1* (Fig. 2-A): Article 2 sparsely setulose along anterior margin. Article 5 with

setulose posterior lobe guarding about 60% length of posterior margin of article 6. Article 6 triangular, distally expanded, with right-angled palmar angle; palm (Fig. 2-B) subtly convex, delimited by a pair of short spines; palmar margin finely pectinate, lined with a row of minute setules. Article 7 fitting palm, not pectinate, with a middle tooth. *Gnathopod 2* (Fig. 2-C) parachelate. Article 2 almost bare. Article 5 very narrow; posterior lobe very short, guarding only base of article 6, apparently expanded forward beneath hinge of articles 5-6. Article 6 large, as long as article 2, with both anterior and posterior margins parallel to each other; palm (Fig. 2-D) almost straight but weakly convex only at apicalmost region, delimited by a pair of spines; palmar margin as in gnathopod 1. Article 7 fitting palm, not pectinate, with a middle tooth.

*Pereopods 3-4* (Fig. 2-E, G): Article 2 setulose along anterior margin. Articles 4-6 spinulose along posterior margin and setulose along anterior margin. Article 6 slightly tapering. Article 7 (Fig. 2-F) with a short distal nail and a prominent mammilliform bulb proximal to nail. *Pereopods 5-6* (Fig. 2-H, I): Article 2 with posteroproximal region of posterior lobe smoothly rounded, fringed with a row of spines along anterior margin, accompanied with submarginal row of spines obliquely near anterior margin. Article 4 spinose along both anterior and posterior margins. Articles 5-6 spinose along anterior margin and setulose along posterior margin; article 6 slightly narrowing distally. Article 7 as those of pereopods 3-4. *Pereopod 7* (Fig. 2-J): Article 2 a little broader than those of pereopods 5-6, with posteroproximal region of posterior lobe apparently extended posteriorly and slightly angular.

*Pleopods 1-2* (Fig. 3-A): Both rami 1.5 times as long as peduncle; 10 articles on outer ramus and 8 on inner ramus; first article furnished along outer margin with a row of plumose setae, which are radially spreading. Coupling spines (Fig. 3-D) with 3-4 teeth along each side. *Pleopod 3* (Fig. 3-B) a little shorter than others. Peduncle bearing a long spine (Fig. 3-C) on posterior face near coupling spines. Outer margin of first article of outer ramus lacking marginal setae.

*Uropod 1* (Fig. 3-E): Peduncle lined with a

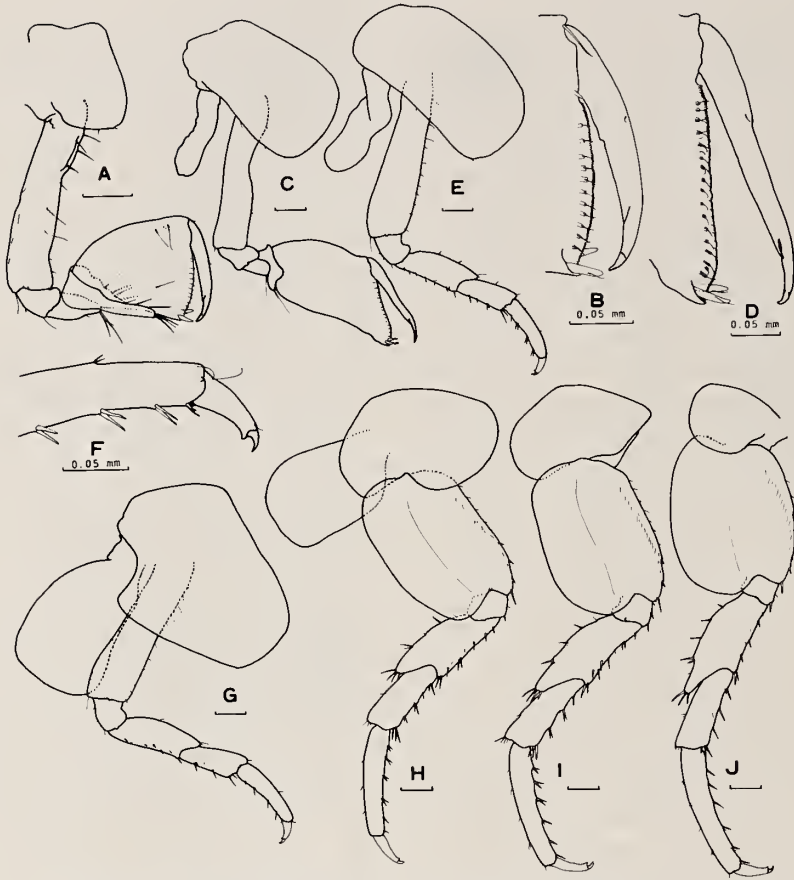


FIG. 2. *Paramphilochus parachelatus* n. gen. et n. sp. Female (holotype): A, gnathopod 1 (R, out); B, palm of gnathopod 1; C, gnathopod 2 (R, out); D, palm of gnathopod 2; E, pereopod 3 (R, out); F, articles 6-7 of pereopod 3; G-J, pereopods 4-7 (R, out). Bar scales 0.1 mm if not mentioned.

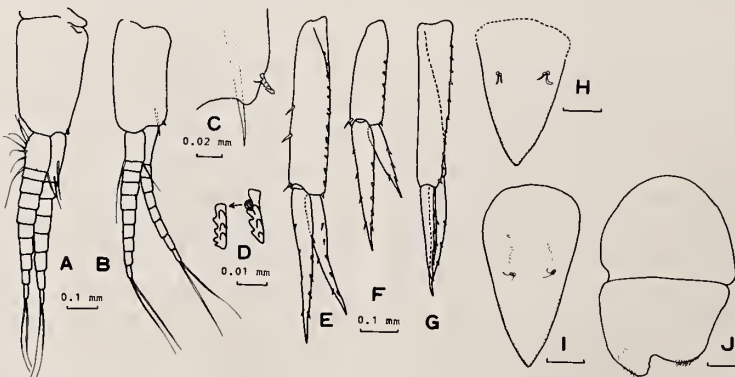


FIG. 3. *Paramphilochus parachelatus* n. gen. et n. sp. Female (holotype): A-B, pleopods 1 and 3 (R, ant; so); C, spine on peduncle of pleopod 3 (R, ant); D, coupling spines of pleopod 1; E-F, uropods 1-2 (R, ds); G, uropod 3 (L, ds); H, telson (ds). Female (paratype: 3.5 mm): I, telson (ds); J, labrum. Bar scales 0.05 mm if not mentioned.

row of densely arranged small spines along outer dorsal ridge, and with a few middle and an apical longer spine along inner ridge. Inner ramus 80% as long as peduncle, lanceolate, with a few marginal spines along both dorsal ridges. Outer ramus 80% as long as inner. *Uropod 2* (Fig. 3-F) reaching distal margin of peduncle of uropod 3 *in situ* view. Peduncle 60% as long as that of uropod 1, spinose along outer margin and bearing an apical spine on inner margin. Inner ramus 1.3 times as long as peduncle. Outer ramus 60% as long as inner ramus. *Uropod 3* (Fig. 3-G): Peduncle as long as that of uropod 1, bare along inner ridge, with outer dorsal ridge lined with a row of densely arranged small spines. Outer ramus 80% as long as inner.

*Telson* (Fig. 3-H): short, scarcely exceeding apex of posterior teeth of urosomite 3 *in situ* view, coniform, subacuminate at apex.

*Female* (paratype: 3.5 mm). A few parts damaged or lost in the holotype are described below.

*Labrum* (Fig. 3-J) asymmetrically incised.

*Telson* (Fig. 3-I) as in holotype, twice as long as its width, with rounded proximal margin.

*Male* (allotype: 2.5 mm) very similar to female, except his smaller size.

## DISCUSSION

The narrow and nontritulative mandibular molar of the present new genus is common with other three genera of the subfamily Amphilochninae, namely, *Amphilochooides*, *Paramphilochooides*, and *Amphilochnus*. Among the above three genera and the present new genus, *Amphilochooides* and *Paramphilochooides* are closely allied to each other in several characteristics such as reduced maxilla 2, longer telson, and toothed inner plate of maxilla 1 whose distal palp article is expanded and sculptured. The new genus is very similar to the rest, *Amphilochnus*, in having basic maxillae 1-2, and shorter telson. Despite the similarity of most body parts, the new genus is markedly distinguishable from *Amphilochnus* by the shorter posterior lobe of

article 5 and the parachelate article 6 of gnathopod 2; particularly, the latter characteristic is not hitherto found among the family Amphilochnidae. The inner plate of maxilla 1 of the new genus shows a condition similar to *Paramphilochooides* (and probably *Cyclotelson*) rather than *Amphilochnus*; with a single tooth at the distal edge of inner margin. But this does not necessarily mean closer affinity of the present new genus to *Paramphilochooides*, because one species of *Amphilochnus* (*A. planierenis* Ledoyer [1]) has the inner plate of maxilla 1 similar to the new genus, and the detailed structure of the inner plate is still unknown in many species of *Amphilochnus*. Taxonomic importance of this character as a generic character should be reevaluated in the future.

The present new species has the mammilliform process on the article 7 of pereopods 3-7. Such a mammilliform process is also seen on pereopods 3-7 in *Amphilochnus kailua* J. L. Barnard [2] and on pereopods 3-4 in *Gitanopsis pusilla* K. H. Barnard [3]. This structure is rare in Amphilochninae. But it is generally thought to be of low taxonomic importance as a generic character [2], because it is sporadically found in several species of separate genera as above.

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## REFERENCES

- 1 Ledoyer, M. (1977) Contribution à l'étude de l'écologie de la faune vagile profonde de la Méditerranée Nord Occidentale. 1. Les gammariens (Crustacea, Amphipoda). Boll. Mus. Civ. Stor. Nat. Verona, 4: 321-421.
- 2 Barnard, J. L. (1970) Sublittoral Gammaridea (Amphipoda) of the Hawaiian Islands. Smiths. Cont. Zool., 34: 1-286.
- 3 Barnard, K. H. (1916) Contributions to the crustacean fauna of South Africa. 3. Ann. S. Afr. Mus., 15 (3): 105-302, pls. 26-28.